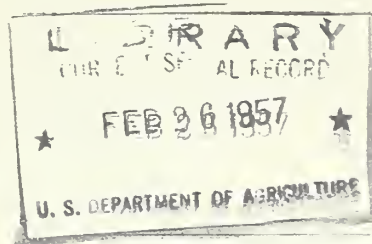


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THE AGRICULTURAL ECONOMY OF ETHIOPIA



7 (U.S. Foreign Agricultural Service,
UNITED STATES DEPARTMENT OF AGRICULTURE



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Local variations in the spelling of place names are common in Ethiopia. In addition, different cartographic and general reference sources have been found to incorporate both English and European modes of spelling.

To reconcile these discrepancies, names chosen for use in this bulletin conform to spelling designated by the United States Board on Geographic Names. The most common spelling is parenthetically inserted, in some cases, to prevent confusion.

THE AGRICULTURAL ECONOMY OF ETHIOPIA

Henrietta M. ²Holm

While Ethiopia is self-sufficient in most agricultural commodities and able to contribute significantly to the world's export markets, an impressive potential in agricultural resources remains to be exploited.

Nine-tenths of the Empire's 20 million people derive their livelihood from agriculture, and the processing and exchange of farm products. Living standards appear to fluctuate, from a base of adequacy, with the degree that settled farming is related to pastoralism. Most Ethiopian farmers, however, combine crop cultivation with livestock grazing, and are totally dependent on neither the agricultural nor the pastoral economy.

Agricultural land is abundant - over 10 acres per capita of the farming population - but much valuable land is not yet developed. Both soil and weather conditions favor varied crops, their composition determined by elevation more than by any other physical factor. Food-grains are raised on nearly half the cultivated land. Coffee, oilseeds and pulses annually aggregate about three-fourths of the total value of exports.

Close to 50 percent of the country is in pasture land. Livestock numbers are estimated to total over 57 million head, or in ratio to the human population, nearly four to one. The export value of hides and skins is exceeded only by that of coffee.

Ethiopia's value as a major food source has been inhibited by the inaccessibility of large sections of her productive land; by widespread soil erosion caused by overgrazing; by prevalence of crop pests and animal disease; by adherence to traditional primitive techniques in cultivation and marketing; and by various circumstances of social economy, as national health and education.

In the last decade large-scale plans for economic reform have been programmed by the Imperial Ethiopian Government, and funds arranged for their development. Foreign advisors and agencies have made valuable contributions both in planning and demonstration stages. Indications of progress have been encouraging in many instances, though the rate of achievement remains inevitably slow.

For the immediate future, and with the implementation of plans now under consideration for development of the country's communication and transportation facilities and agricultural extension service, a number of improvements can be effected by the application of new techniques which require neither overly large cash expenditures, nor abrupt conflict with established tradition. Prospects for expansion of cash crops, i.e., coffee, cotton, hides and skins, with perhaps the aid of foreign interest and investment, appear to be bright.

Natural Environment

The Kingdom of Ethiopia, after Egypt the oldest independent state in Africa, and Eritrea, a former Italian colony federated with Ethiopia since September 15, 1952, combine to form the Ethiopian Empire. This newly formed political unit occupies a 456,000 square mile area in northeastern Africa between 4° and 18° N. Latitude and 33° and 48° E. Longitude. Common land boundaries are those with the Sudanese Republic on the west, with Kenya and the Trust Territory of Somaliland on the south, and on the north, with British and French Somalilands. The length of the Eritrean coastline faces the Red Sea to the north and east.

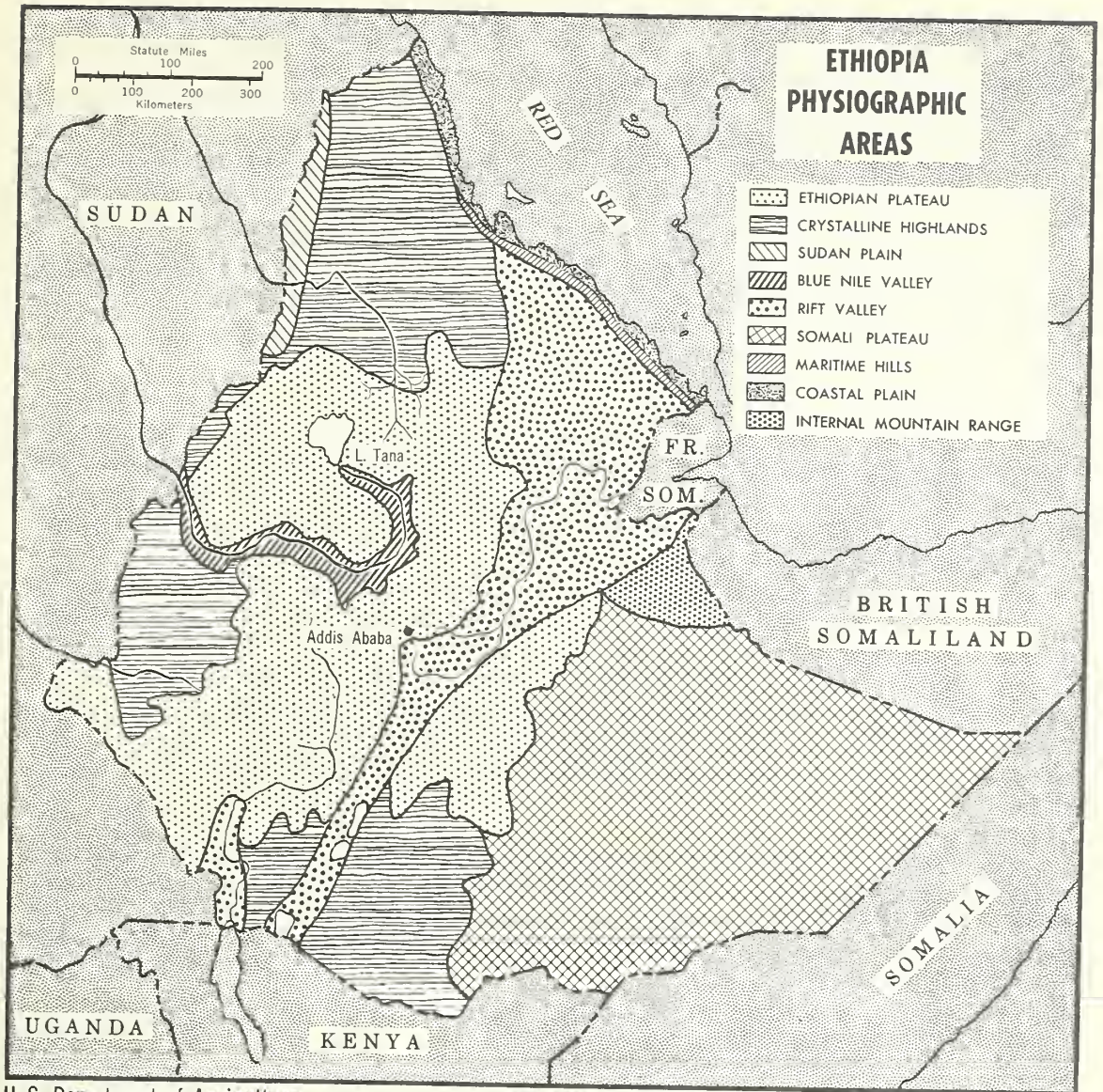
Physiography

The physiographic variations which influence the agricultural economy of the Empire are indicated below.

Ethiopia's most productive agricultural areas lie on its high lava plateau. This area, intersected by lofty, almost impregnable mountain peaks, composes most of the central third of the country. Elevations over most of the plateau range between 6,500 and 10,000 feet; annual rainfall is generally between 60 and 78 inches. The staple cereal, teff, grows well at high altitudes. Black, red and white durras (grain sorghums) are widely cultivated. Between 8,200 and 9,800 feet, oats flourish; wheat is grown up to 10,000 feet; and barley at elevations up to 11,500. In the south, coffee culture is of first importance. The highlands provide good grazing for cattle, although they support fewer stock than are kept in the lowlands. Stock-raising in Ethiopia appears to decline with altitude.

The waters of three rivers of the plateau reach the Mediterranean Sea through the White Nile. The Blue Nile (Abbai) River, flowing out of Lake Tana through a valley worn some 3,200 feet below the plateau's level, joins with the White Nile at Khartoum in the Sudan. Barley is grown in the cool upper elevations of the Valley; limes and bananas are cultivated in its lower reaches. The Takaze River, rising north of Lake Tana, flows across the Sudan Plain to enter the White Nile at Atbara. The River Baro runs through the highlands of southwestern Ethiopia to meet the White Nile at Malakal. Two sizable waterways of the plateau, the Omo, flowing south into Lake Rudolph at the Kenya border, and the Awash, which empties into Lake Abbe at the boundary with French Somaliland, are fully land-locked.

From the standpoint of agriculture, the value of other physiographic regions of the Empire is variable. Sectional characteristics



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and limitations of these are: (1) the crystalline highlands, second area in agricultural importance, which border the lava plateaus in Eritrea on the northwest, on the southwest, and at the south central zones adjoining Kenya. While rainfall in the northern Eritrean highlands, about 16 inches annually, produces a desert-steppe climate, the average fall in the south is from 16 to 40 inches, and barley, durra and teff can be grown. Grazing is a principal occupation. In Walaga (Wollega) Province in the southwest, rainfall ranging from 32 to 80 inches annually, and elevations of from 900 to 9,000 feet permit barley production, as well as good crops of coffee and bananas. With less variation in rainfall and elevation, the Borano highlands of the south are well adapted to crops near the lava plateaus; toward Kenya, the area is increasingly suited to nomadic pastoralism.

(2) Where the northwestern lava plateau slopes into the Sudan Plain, broad flood plains permit cotton cultivation where water for irrigation is available. Rainfall is practically non-existent in the desert north of the plain, but increases to about 20 inches annually in the steppe zone to the south.

(3) Thrusting through the heart of the lava plateaus from southwest to northeast, the Rift Valley lies some 2,000 to 3,000 feet below steep escarpments at either side. A chain of lakes follows the floor of the valley as far north as the town of Gurage. Because annual rainfall is usually less than 10 inches, agriculture is possible in the southern Rift only with irrigation. Stock-grazing prevails throughout the valley.

(4) To the north the Rift broadens out into the depressed saline Danakil lowlands, where, in the Kobar Sink, elevations are as low as 300 feet below sea level. High temperatures and absence of rainfall preclude agriculture. Beyond the lowlands, the Danakil Alps, a serrated mountain chain rising to heights of over 6,500 feet, flank the narrow Red Sea coastal plain, where crops may be raised only near streams flowing down from the escarpments.

(5) East of the Rift Valley and the extensions of lava plateaus and crystalline highlands, the vast Somali plateau descends gradually southeastward into Somalia. Heavily eroded and broken at its contact with the lava plateau and crystalline highlands by the streams which unite to form the Giuba and Uebi Scebeli Rivers, the Somali plateau becomes more regular in its central and eastern limits. Thousands of acres of brushland, thorn bush and coarse grasses support heavy grazing for both Ethiopian stock and herds from neighboring Somali territories.

Temperature

One of the nation's definite assets is its climate in the regions of greatest economic importance. Except in the lowlands, temperatures are mild to cool, and even Alpine in character at highest elevations. Nights are always cool; in daytime intense sunshine gives the impression of higher temperatures than actually are registered. Warmest weather occurs from March to May, the coldest in December and January. At Addis Ababa the annual absolute range is between 27° and 85° Fahrenheit; at Harar, 45° to 90°; and at Jima (Jimma), 33° to 92°. Above 7,500 feet temperatures on the central plateaus frequently approach freezing, but seldom go as high as 95°.

In areas near the Somalia border, in the Danakil lowlands, and close to the Sudan, a dry climate, with temperatures well over 100°, prevails. Here fluctuation in temperature is marked throughout a day, and varies considerably from month to month.

Mean monthly and mean annual temperatures, with the absolute maximum and minimum recorded at selected stations in Ethiopia are indicated in the following table:

Table I. - Mean monthly and annual, annual absolute maximum and minimum temperatures, selected stations.

	Station					
	Massaua	Tessenei	Asmara	Jima	Addis Ababa	Harar
	°F.	°F.	°F.	°F.	°F.	°F.
January	79	79	60	65	58	66
February	79	82	61	69	60	68
March	81	81	63	69	62	69
April	85	92	65	69	62	69
May	88	91	66	68	62	69
June	93	89	66	66	61	68
July	95	81	62	64	58	66
August	94	78	62	66	58	65
September	91	80	63	66	59	67
October	87	85	61	66	58	68
November	84	83	60	62	57	67
December	80	80	59	65	56	67
MEAN ANNUAL	86	83	62	66	59	68
Absolute maximum	112	112	87	92	85	90
Absolute minimum	65	54	36	33	27	45

For agricultural purposes, Ethiopians have evolved a classification of climatic zones based on their relation to altitude, as follows:

(1) Cold (Dega) Zone, at heights of from 7,800 to 15,000 feet and temperatures ranging from about 60° to near freezing. Wheat, barley, teff, beans, flax and hardy fruit are cultivated.

(2) Temperate (Woina Dega) Zone, the area between 5,200 and 7,800 feet which includes most of the plateau. With a medium mean temperature range usually from 60° to 85°, thermic conditions are good even in hottest months. In addition to the basic native durras and teff, corn and wheat are grown, as well as cotton, oilseeds, flax and a wide range of vegetables, including potatoes, beans, tomatoes, spinach, asparagus, and celery. Strawberries, olives, peaches and citrus fruits are cultivated to a more limited extent.

(3) Tropical (Quolla) Zone, below 5,200 feet. Inland at these altitudes are stretches of unproductive steppe-land, savannahs and jungle; humidity is uncomfortably high near the sea. Corn, durra, tobacco and sugarcane are sparsely cultivated, but only a pastoral economy can be said to thrive.

Rainfall

High agricultural productivity in Ethiopia largely results from adequate rainfall over most of the crop-growing sections of the cold and temperate zones. Here rains are intermittent during the greatest part of the year. Depending on location, the principal wet season may start in April or as late as July, and continue after mid-September. Cool, dry weather is seasonal from October until the advent of the "small rains" of early spring.

For more than thirty years, average annual rainfall in Addis Ababa has held constant at 49 inches. Highest recorded mean annual precipitation, near Gore in western Ethiopia, is close to 80 inches. At lowest altitudes, where wet and dry seasons are more closely delineated, the yearly average range is from little more than 4 inches in the Ogaden district of the Somali plateau, and less than 2 inches in the Danakil lowlands.

Average monthly and annual rainfall in the Empire are:

Table II. - Average monthly and annual rainfall.

Month	Station						
	Addis Ababa	Asmara	Gondar	Harar	Jima	Massaua	Gore
	- - - - - Inches - - - - -						
January	0.6	1/	0	0.4	0.3	1.7	1.0
February	1.6	0.1	0.6	1.0	3.3	0.7	2.0
March	3.6	0.2	0.8	2.0	6.1	0.6	3.3
April	3.3	0.5	2.2	5.1	5.2	0.2	5.6
May	3.7	3.6	3.2	6.3	7.9	0.3	10.1
June	5.2	1.0	5.6	4.7	8.6	0	12.8
July	10.9	5.3	15.6	5.6	6.3	0.1	11.0
August	11.2	4.3	11.6	5.4	9.1	0.4	12.9
September	7.9	0.6	6.1	3.8	6.0	0.2	12.8
October	0.8	0.4	0.9	1.9	6.0	0.4	0.7
November	0.6	0.9	1.5	1.0	2.5	1.0	0.3
December	0.3	1/	0	0.5	0.4	1.7	1.2
ANNUAL	49.7	16.9	48.1	37.7	61.7	7.3	73.7

1/ Less than 0.05 inches.

Soils and soil problems

While no soil survey of Ethiopia has been completed, detailed samplings and observations indicate that soil groups are frequently different over a very restricted area. Over a few miles soils may range from desert brown, brown, chestnut, the Chernozem types, red and yellow lateritics, and Podzolic. The majority of soils, however, derived from rather recent fine-textured volcanic parent materials, are composed of considerable quantities of clay and are of good structural stability.

Two broad types contribute most to the productivity of the nation's agricultural zones. Best cultivation and pasturage is found on black alluvial soils of basaltic origin, most common in the valleys and plains of the Temperate zone, and on red-brown sand or clay soils, the product of decomposed arenaceous rocks. These latter, though abundant on the eastern and western lowlands, are also much in evidence on the plateau. The grayish-white to red desert soil group,

which predominates over most of the Rift Valley and on the coastal plains, is of only limited value agriculturally.

Among the physical detriments to modern cultivation practices in Ethiopia, and in particular to mechanized cultivation, are: (1) the productive soils' need for a regular regenerative period; (2) poor internal drainage in most areas; and (3) sheet and gully erosion. Soils vary in chemical reaction from neutral to acid, with good phosphate and potash content. Nitrogen deficiency is widespread, however. The current practice of removing nearly all crop residue prescribes low amounts of organic matter. Without a stringent pattern of fallow and legume rotation, crop yields cannot be sustained.

The flow of water, and erosion are in some degree controlled by division of the land into small, irregular patches, but possibilities for the use of farm machinery are thereby diminished. Consolidation of the fields, on the other hand, without systems of contour farming, terracing and strip cropping on a scale now beyond the resources and imagination of the average Ethiopian farmer, would result in the gully-ing and erosion of fields, past the point of cultivability.

In the Harar-Diredawa region, where even medium rainfalls produce flooded fields, clean cultivation, rapid run-off of excess water, and over-grazing are customary. Without rotation of grazing little vegetative cover remains as protection against erosion. Deeply gullied fields can be worked only by hand or by oxen.

The heavy black clays of the lava plateau, while resistant to gully erosion except in scattered areas, are susceptible to sheet erosion. Muddy creeks and rivers take the appearance of streams of soil. At the peak of the run-off period, 20 percent by volume of the Awash River has been found to be silt.

Population

Ethiopian authorities indicate that nearly 20 million people reside in the Empire at the present time; no estimate of their annual rate of increase is available. Most of the native population is of Semitic and Hamitic origin, but there are a few Negroid tribes, and foreigners, principally Arabs, Indians and Italians, number about 20,000. The heaviest concentration of population is in the highlands of western and southern Ethiopia. For the Empire as a whole there are about 43 persons per square mile. It is believed that nearly 90 percent of the people follow agricultural pursuits, largely subsistence farming.

Land Utilization

Nearly half the Empire's total land area is in meadows and

natural pastures. Cropland and orchards represent only about 10 percent; an additional 7 percent of unused acreage is believed to be potentially productive. Estimated acreage distribution is illustrated in Table 3, below:

Table III. Land Utilization, Ethiopia

Category	Former Ethiopia	Former Eritrea	Total Empire	Percent of total
	-----Million acres----			Percent
Cropland and orchards	27.1	0.7	27.8	9.5
Potentially productive land, now unused	19.8	0.5	20.3	6.9
Meadows and natural pastures	123.6	22.2	145.8	49.8
Forests and woodlands	7.4	3.0	10.4	3.6
Wasteland, built-on areas and other	84.0	4.5	88.5	30.2
Total land area	261.9	30.9	292.8	100.0

The bulk of Ethiopia's crop cultivation takes place on small high-land subsistence farms, in good years capable of producing a small surplus for barter or marketing after the requirements of the farm family and rental obligations have been met. In size few holdings exceed 12 acres; most have a smaller acreage adapted to the individual family's resources in labor and the customary primitive tools and equipment. Native farmsteads are composed of a group of huts (tucols) of sizes varying according to whether they are occupied by the family head, his children, or farm laborers. Among polygamous clans, each wife has a hut of her own.

Land Tenure

Although the relationship of the traditional systems of land tenure to efficient land use has received Government attention in recent years, ownership of much land throughout the country remains obscured. In the southern provinces large areas are held by feudal landlords whose original rights of ownership derived from grants in lieu of payment for military and other services to the ruler. Cultivation on these lands has been carried out by tenant-owners (gabbars) indebted to the landlord for a high proportion of their annual production. By the payment of regular salaries for military services, Emperor Haile Selassie obliterated the land grant system, and, in an attempt to abolish feudal land tenure, in 1941 ordered the measurement and registration of all

rural lands. The gabbar was first freed by law from unpaid services (corree) to the landlord; many landlords, including the Coptic Church, were deprived of traditional immunities from taxation. In numerous instances, to avoid payment of taxes, landlords renounced their ownership rights, leaving their lands open to resettlement by ex-serfs. By government direction, eventual ownership is now to be possible for this new group of farmers after several years of continuous cultivation, payment of asrat (10 percent of production) to the Government, and measurement of land. In areas of the southern provinces where fertile land is plentiful, the new system of distribution has proved popular. In less fertile sections, gabbars have been reluctant to leave their landlords.

Resistance to measurement and redistribution of lands has been strong enough in the northern provinces - particularly in Bagemder (Begemder), Gojam (Gojjam) and Tegre (Tigre) - to force postponement of the reforms. The Coptic Church holds much land in the north and other large areas of farmlands are occupied by freehold kinship groups whose members may claim rights of cultivation even after generations of absence from the community. Clan laws proscribe the alienation of family lands, and rumors of the changes in the south are a source of great dissention and anxiety among northern peasant farmers. For the present, as regards the northern half of the country, the Government has compromised with the imposition of only a land tax, based on estimated holdings, and calculated at an old rate set in 1927. As part of a program for economic reform initiated in 1954, State lands were allocated for free distribution among certain categories of unemployed persons. Fifty-acre tracts in fertile Kaffa Province were given to each of a thousand landless Ethiopians. The farms lie principally in a coffee-growing district, but property may be utilized as the recipients wish, as long as it is properly cultivated and progressively improved.

Considerable additional redistribution of farmlands has been officially announced as projected for the future, but it is obvious that age-old patterns of tenancy cannot be abruptly changed. Added to resistance by weight of tradition is the passive opposition among some large land-owners, desirous in their own interests of preventing separation of workers from their lands. Delaying tactics on the part of this group continue to inhibit progress.

Education and Training of Agricultural Workers

Few Ethiopian farmers have ever attended any school; most are illiterate, as is 90 percent of the total population. Of the 5 percent of children regularly in school throughout the country, the majority will attend for less than 5 years. About half of Ethiopia's 40 secondary schools now have an instruction level comparable to that of a Euro-

pean or American school. Only a few of these offer instruction in basic agricultural subjects.

There are two institutions of American high school-junior college level in the country where agricultural and technical training is available. These schools are the Emperor's school at Ambo, which is administered by the Ethiopian Ministry of Agriculture and the Jima Agricultural Technical School at Jima, which was established in 1952 as a joint United States/Ethiopian technical cooperation project. By 1954/55 about 160 students could be accommodated at the Jima school with courses in practical agriculture, farm shop and mechanics, science and allied studies, led by an American teaching staff.

The greatest achievement in agricultural education will be the opening in October 1956 of another United States/Ethiopian technical cooperation project, the Imperial Ethiopian College of Agriculture and Mechanical Arts at Harar. About 200 students, graduates of two-year courses at the Agricultural Technical School at Jima will be enrolled.

Since 1952, a program of agricultural extension and experimentation, with emphasis on training of Ethiopians, has been operating under the joint auspices of the Ministry of Agriculture and the United States International Cooperation Administration. For each project ICA specialists are provided by the United States; Ethiopia contributes land, buildings and personnel. Operating costs are equally shared by both Governments. Agricultural programs currently underway are those for the control of plant pests and animal diseases, for livestock breeding and management, coffee development and improvement, introduction of farm machinery, and general extension services. The Food and Agriculture Organization of United Nations also provides technicians mainly to conduct surveys in forestry, soil analysis, veterinary and other agricultural services.

Farming Practices

The Ethiopian is primarily a subsistence farmer, prevented by the limitations of primitive cultivation methods from advancing far beyond that level. In comparison with many African countries, however, his standard of agriculture is high; the Ethiopian farmer knows his job and does it well. In several ways the cultivation practices he has evolved to suit his environment bear striking resemblance to modern farming methods.

By leaving land uncropped for a season some organic matter is added to the soil and reasonably satisfactory rotations have been developed in most areas. It is a common belief that a field can only be cropped productively for a few years; the farmer must then find and plow fresh ground if he is to continue to reap good crops.

Preparation of the land, while not deep, is very thorough. A definite handicap to the farmer, and a great drain on his working time, is his wooden, steel-pointed plow, a digging tool which breaks the soil but cannot turn it. With the depth of each plowing only about four inches, land must be plowed at least three times before an adequate seed bed can be formed. A fourth plowing, a substitute for harrowing, is necessary to cover the seeds. Land is plowed on the contour and left rough to control water and wind erosion in some degree.

Other farm equipment in general use includes: (1) spades, which in northern Ethiopia may have one or two iron points, but in the south are merely wooden sticks from 5 to 6 feet in length. These are employed in the breaking up of pasture land and in the preparation of soil for eucalyptus growing; (2) hoes, small short-handled tools of curved wood, only in recent years equipped with an iron point. Most weeding is done by hand, however; the Ethiopian farmer has little knowledge of row planting and efficient use of the hoe is difficult; (3) sickles, of which two types are used - the large, almost straight-bladed Guraghe sickle for grass cutting and a smaller, curved sickle for reaping grain. In common with plows, metal parts of these tools are of scrap iron, with soft, non-resistant cutting edges. Although good sandstone is available in the country, tools are seldom sharpened.

Most farmers save their own seed. Very recently there has been a small domestic production of pure tested seed. High transportation costs prohibit wide use of selected seed from abroad. Chemical fertilizers are seldom employed, and little use is made of animal manure.

Mechanical traction and wheeled transport are all but unknown in the country. Donkeys, camels, horses and mules are the pack animals. Oxen supply most of the draft and field power.

Three men with four oxen can thresh about 700 pounds of grain in a day. Threshing is accomplished by oxen trampling the outspread sheaves until the grain drops out. Chaff is separated by tossing the grain in the air with wooden forks and shovels made from tree branches. After sieving, grain is stored in mud-plastered wicker receptacles which provide only moderate protection from rodent and insect damage.

Grains for food and beverages are either ground in stone mills, or more primitively, crushed in a mortar. Mills consist of a bottom stone some 2 feet in diameter with a smaller, 6-inch stone runner wheel, which grind the grain to the fineness desired. About 2 pounds an hour can be produced. Grains for beverages are crushed in mortars. These are usually hollowed-out tree trunks in which the grains are laboriously pounded with wooden pestles, by the women of the family.

From 80 to 90 percent of all agricultural produce is consumed on the farm. Most of that which is not utilized during the season for the farmer's own needs, or stored against future crop failure, is disposed of fairly near to the place where it is grown. Some is bartered, some sold in local village markets.

While it is apparent that most Ethiopians have ready access to an adequate diet in terms of quantity, according to Western standards there appears to be a lack both of variety and balance. Away from the larger cities, food taboos are still common in Ethiopia, and religious fast days frequent. Pork is not eaten by either Muslims or Coptic Christians. The latter may not have meat or milk on any Wednesday or Friday of the year, nor during the Lenten season. By Ethiopian standards, however, and in accordance with their dietary preferences, sufficient amounts of practically all elements required for proper nourishment are available within the Empire.

For exportable quantities of grains and for hides and skins, Addis Ababa is the assembly point, as well as the chief distribution center for most of the country's imports. Dire-dawa has cotton mills and is a depot for grains, hides and skins, and coffee enroute to Djibouti, Zeila, Berbera and Mogadiscio. Other collection centers for farm and live-stock products are Harar, Jima, Dase (Dessie), Gore, Nak'amet and Adigrat.

Branches or agents of some 60 registered firms engage in foreign trade throughout the country, with emphasis on exports of hides, skins and coffee, and imports of cotton textiles and manufactured goods for distribution through small merchants. Government-bonded warehousing facilities for export commodities or for imports held for customs clearance are available at Addis Ababa. Storage rates vary with the commodity involved.

Transportation and Manufacturing Facilities

Many agricultural products which can be economically produced in the Empire cannot be economically marketed because of the inadequacy of transport or its excessive cost. The use of certain imported agricultural prerequisites, i.e., fertilizer and other production aids, is similarly deterred by high shipping charges. Construction of railroads and highways is difficult and expensive in this mountainous country. Of the rivers, only a few are navigable for short distances.

There are two railway lines in the Empire, one from Massaua in Eritrea to Biscia (Bisha) west of Asmara, and the principal line, the Franco-Ethiopian railway, which extends from Addis Ababa to the port of Djibouti in French Somaliland. In 1955, 87 percent of the coffee export trade was handled by rail, a continuous rise from 73 percent

in 1951. Rail receipts from traffic in cereals and oilseeds, on the other hand, have continuously declined.

After five years of operations the Imperial Highway Authority has improved about 2,500 miles of roads in a program originally providing for the rehabilitation of about 3,100 miles in Ethiopia and 400 in Eritrea. Much work remains to be done. Probably 40,000 miles of trails and secondary roads criss-cross this rugged country. Secondary roads are maintained by provincial governments, rather than by the Imperial Highway Authority. About 2,500 trucks now operate on the improved highways, as well as on some of the secondary roads.

Ethiopian Airlines, in its tenth year under TWA management, reported a record-breaking cargo ton miles of 1,680,000 in 1955, but service is still too expensive to be considered as a means of regular agricultural transport.

Beyond the processing of coffee and hides and skins for export, most of the Empire's few industrial plants function to supply the home market. Although able to contribute only a small part of total domestic requirements, and heavily dependent on imports for raw cotton, the manufacture of cloth is the most basic of Ethiopian industries. The only modern weaving establishment in the country, the Cotton Company of Ethiopia, at Diredawa, has about 20,000 spindles and 350 looms. Another mill near Addis Ababa spins cotton, but has no weaving facilities. During 1955 a loan was granted by the Development Bank for the construction of a cotton spinning mill near Asmara in Eritrea; no plans for weaving operations at this location have been programmed to date. There are also a number of small knitting mills, and mills for the manufacture of the fiber of the false banana (*Musa ensete*) into rope and cloth for sacking.

Other agricultural processing industries are: about 25 coffee processing centers, one sugar factory, four meat products plants (during 1955 plans were approved for construction of an additional meat packing and freezing plant at Diredawa), 16 oilseed-crushing plants, two for the manufacture of tobacco, 18 flour mills, 9 bakeries, 17 distilleries, two breweries, about 25 wineries, five beeswax processing plants, and three for the making of candles.

Farm Credit

Neither the need nor the desire for farm credit, in its usual interpretation, is well developed in Ethiopia. In primitive tribal economies of the countryside, barter prevails; in towns, cash transactions are the rule. With the establishment of a non-profit agricultural bank in September 1945, a farm credit system was initiated by the Government. The bank has since operated at a loss, however;

only a few hundred loans have been made each year, principally by farmers in the vicinity of Addis Ababa. No agricultural credit is available at commercial banks.

Taxation

Government receipts derive from five major sources: customs receipts; excise taxes; Government-owned enterprises; income taxes; and land taxes. Little information of the relative contribution of agriculture to the total tax revenue is available.

Import duties provide most of the customs revenue, but in the last few years receipts from the export tax on coffee have also been significant. The coffee export tax has fluctuated with the world price of coffee, and now stands at a fixed rate of Eth\$200 (about US\$80) per ton plus a graduated surtax of Eth.\$25 (about US\$11) per ton for each U. S. cent over U.S.55¢ per pound at which Santos #4 might be quoted on the New York market.

Until 1955, income taxes applied in three categories: incomes from rents, salaries, wages, and other easily fixed personal incomes; incomes from commercial and industrial enterprises; and incomes of traders. Most of the revenue was collected from exporters and importers on the basis of fixed percentages of the value of exports (2 percent) and imports (5 percent), with an additional 4 percent tax for education and public health levied on all imports. Actually the burden of the tax, in practice, fell to the consumer. Eritrean traders, who paid not only the Ethiopian tax but an income tax to the Eritrean Government as well, opposed the discrimination.

With a revision of tax laws during 1955, importers and exporters in Ethiopia proper, only, were included for tax purposes with commercial and industrial enterprises; the 4 percent education and public health tax was abolished; and a new Federal import tax on imports and exports (10 percent ad valorem on all goods imported, and 2 percent on exports) was imposed.

While heaviest emphasis in the past has been on the collection of customs duties and excise taxes for revenue, rather than on land taxes, a higher tax directed at the larger landowners is now said to be under consideration. At present an underdetermined number of settled farmers pay the land tax, at a standard annual rate of Eth.\$62 (U.S.\$25) on every 100 acres of first class land.

Crops

There is now no reliable way of accurately computing national production of most crops in Ethiopia. No census has been taken, there is

no cadastral survey, and registration of land titles is fragmentary. The Ethiopian Government does not yet maintain an extension system of sufficient strength to provide complete crop information.

The situation is further complicated by the fact that crops are divided into three categories of disappearance: (1) those consumed on the farm or bartered locally (subsistence crops); (2) those traded for cash in more or less distant markets (market crops); (3) crops which enter the export trade. Further, some crops fall into two or more categories: wheat, for instance, is both a subsistence crop and a market crop; pulses are used for subsistence, in market trade, and for export.

Export statistics provide information as to production trends, but except in the case of coffee, do not reflect actual quantities produced. No data is regularly assembled at marketing centers to measure receipts of crops in category 2. For quantities of subsistence crops grown for consumption and barter, only rough estimates can be made.

Two facts, however, may be accepted with certainty: Ethiopia produces enough food to satisfy practically the total domestic demand; additional production both for home consumption and for trade could be made possible.

Cereal Crops

Cereals hold first place among all food crops grown in Ethiopia. Standing estimates of average annual production (in thousand long tons, and excluding Eritrea) for the seven years 1948-54 have been reported to approximate: teff, 1,475; wheat, 170; barley, 590; corn, 150; sorghum, 160; other foodgrains, 50. Of this group, teff (Eragrostis abyssinica), commonly known as teff lovegrass, is generally preferred as a food.

Teff: With a short growing season, teff flourishes in elevations up to 10,000 feet as well as in the lowlands, and in areas where rains are below average. As it is a self-pollinated grass, most of that produced is a mixture of two separate varieties, red (or brown) and white. At the beginning of the big rains seed is hand broadcast over plowed ground, and covered as flocks of sheep are driven over the land. During October or November, the grain is cut by hand, tied in sheaves, then arranged in stacks measuring about 10 feet high by 8 feet wide. Yields in the lowlands are reported to be 1/2 ton of grain per acre, but over the country the average is much lower. There are a few mechanical grinders in use, but teff is customarily home ground into flour on small stone hand-operated mills. In the making of Ethiopia's national bread, injera, the heaviest preference has been for teff flour,

although in recent years bread made from wheat flour has gained in popularity. In the traditional manner of bread-making, a soft unleavened dough is formed into thin cakes about 18 inches in diameter, then baked briefly on a slightly concave iron griddle over an open fire.

While in many countries teff is grown exclusively for hay or pasture, in Ethiopia only green teff is used for foliage. Yield is estimated at from 8 to 10 tons per acre.

Wheat: Although soil and climatic conditions have restricted widespread cultivation of wheat in Ethiopia, many types have long been grown. Bread grains, hard grains and feed grains, however, are frequently mixed together in the same field, a practice which has worked to the disadvantage of Ethiopian wheat in competition with wheat from North America in Middle East markets. With the post-war increase in demand for wheat and wheat products, however, more systematic seed selection and planting methods have been projected.

Since there is insufficient cold weather to vernalize winter wheat, all that grown in the Empire is "spring" type. Heaviest production is on the cool plateaus at altitudes between 6,000 and 10,000 feet. Ambo, Addis Ababa, Dabra Berhan, Dase, and Gondar are good production centers, as are the highlands south of Awash. In general, hard types predominate at the higher altitudes; because of susceptibility to cold damage, distribution of the softer varieties is confined to lower areas.

Crops are hand sown in the rainy season, usually June or later, and harvested in November and December. As there is small chance of rain spoilage in the long dry season after the harvest, wheat sheaves are ordinarily stacked like cordwood in the fields.

In contrast to its customary use in other countries, for macaroni and paste flours, the native durum is produced principally for a bread wheat. An excellent quality of hard red spring wheat, also well liked for bread, is produced in modest quantities. Semi-hard white, and the soft wheats are fairly abundant and are acceptable for home flour and pastries.

Barley: Barley is cultivated at elevations above 6,000 feet throughout the Empire, often as a supplementary crop after wheat. Since its growing season averages only about two months, it serves as an emergency crop in dry years. With irrigation, or in years of good rainfall, two annual plantings are possible, the second occurring about the end of January, or later in the dry season. Seeding, cultivation and harvesting methods are identical to those for wheat.

Chief food uses in the country are in barley flour, which is ordinarily combined with various finely ground pulses and pimento and

made into small cakes, and barley grains, husked by crushing with mortar and pestle, then roasted, for combination with other foods and for soups. Considerable quantities of barley go into home preparation of the native beer, talla, which is brewed in hollowed-out tree trunks in most Ethiopian households.

Dagussa: Another emergency crop widely grown for both food and forage in dry periods when other crops fail is dagussa (Eleusine coracana). This grain is sown after the November and December harvests, at altitudes of from 1,200 to 6,000 feet. Although yields are characteristically small, dagussa is exceptionally hardy; failure of the crop is rare even under severe conditions of weather.

Sorghums: Many kinds of sorghums, including dual purpose, sirup, fiber and forage sorghums, and the grain sorghums (durra) are grown in Ethiopia. Dual purpose sorghums are used for forage and sirup as well as for grain. Sweet-stalked sirup sorghums are popular for their sugar content, while fiber sorghums provide broomcorn. Forage sorghums, primarily the sudans, grow wild throughout the country.

A high percentage of the grain sorghum production is the tall, crook-necked milo maize, although considerable quantities of true durra are raised. Durra sorghum thrives not only at sea level, but in the highlands up to 8,000 feet. Because of its lesser susceptibility to damage, this crop can be grown in areas where locust infestation prohibits the culture of small grains and legumes. Best growing centers, however, are in zones where rainfall averages between 25 and 35 inches annually.

Most of the crop is the late variety, requiring at least seven months to reach maturity, and is sown well before the big rains start, as early as March. A small minority of farmers plow before seeding, then cover the seedbed by dragging, but the traditional practice is to sow broadcast before plowing, and cover the seed by hoeing. Teams of 15 to 20 oxen are driven over the grain for threshing; cleaning is done by hand. Productivity of durra is high. Yields up to 2/3 ton per acre have been reported; the average range, however, is probably more nearly between 1/5 and 1/4 ton per acre.

In addition to its use in the making of injera and home brewed beer, roasted or popped durra is well liked for food. Fodder is consumed as livestock feed, as fuel, and is commonly used in the building of huts and fences.

Bird control, or the lack of it, is a serious handicap to sorghum production in Ethiopia. After heading starts until the crop is harvested fields must be rigorously guarded from look-out posts, and with sling shots and whips, to prevent destruction of the crop by thousands

of Ethiopia's many species of birds. White, yellow and red seed coated sorghums are especially liable to damage by the flocks; the browns are less well relished.

Corn: Corn is sometimes sown with cotton in Ethiopia in the belief that it provides warmth and a windbreak for the cotton plants. It is also planted with durra as a form of crop insurance; if one crop fails, the other substitutes. If both crops are good, the shorter growing season for corn provides a natural thinning out for the durra.

Field corn is one of the leading crops of western and southwestern Ethiopia and on the Somali plateau. With adequate rainfall good crops are produced at altitudes up to 8,000 feet above sea level. White flint corn is preferred, though red, yellow, and mixed dent varieties are also grown. Seed is sown by hand casting; cultivation practices follow those for other grains. Corn is used both for food and as feed for livestock.

Bultux: Bultux (Penisetum tiphodeum or spicatum), a drought-resistant grain with a short growing period, is widely cultivated on the plateaus. It is primarily raised for a food, either as a cooked mush or as a base for unleavened bread. Lesser quantities are used for forage, or sold for the manufacture of starch or alcohol.

Although climatic conditions in some parts of the Empire are favorable, only minor amounts of oats and rice are presently produced. Pure stands of gray turf oats have been found in the highlands near Addis Ababa. In the lower Awash region, a small part - perhaps a hundred acres - of a Dutch concession area has been planted to rice. Results of the experiment are not yet conclusive.

Pulse Crops

Pulses follow grains in importance as food crops in the Empire. Production of the most common varieties is estimated to be between 550-600,000 (tons yearly). Estimates for Ethiopia alone for an average year (in thousand long tons) are: dry beans, 74; dry peas, 148; broad beans, 98; chickpeas, 148 and lentils, 74.

These crops are well adapted to cultivation on the high plateaus, thriving at altitudes of from 7,000 to 9,000 feet, and in soils of low fertility where other crops cannot be grown. Planting occurs at the end of the rainy season, and, with a long growing period, crops do not mature until about February, after other crops have been harvested.

Chickpeas, and many varieties of beans - horse, broad, haricots, cow and field - are almost entirely used as food, either in roasted form

or ground to mix in the making of wot, a curry-like stew popular all over the country. Field peas, similar to Canadian field peas, are used in the same manner, but also quite frequently eaten in the green state.

Oilseeds

Principal oilseeds grown in Ethiopia include neuk seed (niger), sesame, peanuts, linseed and rapeseed. Annual production for Ethiopia only is estimated (in thousand long tons) at: neuk seed, 98; sesame, 35; linseed, 50; peanuts and rapeseed, 20 each. Production of cottonseed, cabbage, mustard, sunflower, pumpkin, castor and grass seeds brings the estimated yearly total close to 250,000 tons.

The 16 oil extraction plants in the country operate at only a fraction of their total annual capacity (50,000 tons); most oilseed is crushed on the farm in small hand presses. Edible vegetable oils are widely used in the native diet. Oilcake is customarily burned as fuel, rather than fed to livestock. About 1/5 of the oilseed crop enters the export trade each year.

Neuk, with an oil content of from 38 to 50 percent, provides the principal cooking oil of the country, and furnishes most of that used for the making of soap. Peanuts are particularly important in the grain sorghum areas, as near Dase and Harar, where they are planted after the sorghums are up and plowed for the first time. Only a small amount of the peanut production is crushed for oil, in contrast to the sesame seed crop, produced primarily for that purpose. The most important inedible oilseeds, linseed and castorseed, are expressly produced for their oil.

Sugar Cane:

Although sugar cane has long been cultivated in Ethiopia, until 1954 all refined sugar requirements had to be met by imports. Only sugar cane stalks were used for food, as a confection. In 1954 the Ethiopian Government awarded a concession to the Dutch firm, N. V. Handelsverungen, for the operation of Wonji Sugar Estates, a 15,000 acre tract near Nazareth on the Franco-Ethiopian railroad. Production of sugar at the Wonji refinery totalled about 16,000 tons in 1954-55, and is expected to reach 25,000 tons, the mill's capacity, by the November-June crushing season of 1956-57.

With annual domestic consumption now estimated at nearly 25,000 tons, and an increase in consumption of 2,500 tons a year expected, the Dutch company has projected, subject to certain assurances on the part of the Government with regard to taxes, the construction

of a new factory of 30,000 tons capacity. Negotiations are still being carried on. If construction is approved, it is believed that after the three year period necessary to attain full productive capacity, a considerable amount of sugar will be available for export, until, in seven or eight years, consumption has increased to meet output.

Other Food Crops

Other food crops grown are many varieties of garden vegetables, and fruits and nuts.

Per capita consumption of vegetables by Ethiopians is said to be low, although increasing somewhat as improved seed has recently begun to be developed locally. In the last two or three years many kinds of imported vegetable seeds have been experimentally grown with good success at the Agricultural Technical School at Jima, and at Addis Ababa and Shashamani (Shashamanna). Most commonly cultivated are: artichokes, asparagus, beans, beets, broccoli, brussels sprouts, cabbage, carrots, cauliflower, celery, garlic, Swiss chard, chillies, corn, cucumbers, eggplant, lettuce, lima beans, okra, onions, peas, potatoes, sweet potatoes, pumpkins, peppers, radishes, spinach, squash, tomatoes and turnips.

Citrus fruits, including oranges (burtoocan), kumquat, lemons, limes, tangerines and grapefruit, are fairly widely grown, as are the small but flavorful Ethiopian bananas. Avocado pears, grapes and mangoes are produced in the Harar-Diredawa region. In addition, almonds, papayas, peaches, pomegranates, strawberries, guavas, pineapples, plums, wild olives, figs and custard apples grow under cultivation, or wild, in various parts of the Empire.

Annual exports of fruits and vegetables combined average between 2,500 and 3,500 tons at the present time.

Feed Crops

With nearly half the total land area in natural grasslands, in years of average weather conditions regular supplemental feeding to maintain Ethiopia's herds and flocks has been contrary to general custom, and limited to workstock during periods of more than average activity, or to all animals in dry seasons of unusual duration. Corn and grain sorghums are then fed, with corn fodder, grain straws, and bean and pea vines. In the vicinity of oilseed-crushing and grain mills, small quantities of oilseed cake and mill by-products are also used for the stock.

Sod grasses, which are green throughout the year, and many species of wild legumes are found in the high plateaus. Bunch grasses

predominate at lower altitudes. Because of the huge livestock population, however, few grasses survive long enough to make seed; in many sections of the land over-grazing, principally by sheep and goats, has reduced the fine native growths to weeds of little nutritional value. Since it is apparent that the balance between available feed supplies and animal numbers has been nearly reached, under a program projected for range management, new grasses and legumes are being introduced. Bermuda grass, annual rye grasses and the annual lespedezas have shown adaptability and promise.

Industrial Crops

Cotton: Cotton is grown in two small areas of Ethiopia, one near Tesseneti, the other along the Red Sea near Massaua. Estimates of total production vary from 1,000 tons a year to more than double that amount. As an indication of supply, however, nearly 800 tons of long-staple cotton were exported from Eritrea in 1955 to Italy and the United Kingdom; two cotton factories bought 500 tons of short-staple types in late 1955 and early 1956; and it must be presumed that nearly that tonnage is still being absorbed by growers for hand-weaving and cottage industries. Roughly 90 percent of the country's raw cotton for mills (15,000 bales are used a year) and nearly half its cotton yarn and fiber requirements must be imported.

A recent FAO survey indicates that two to three million new acres of land suitable for cotton production might be profitably planted to the crop on a biennial rotation system, without interfering with the production of food crops. On this acreage, of from 1 to 1-1/2 million acres each year, a yield up to 80,000 tons might be expected. Most of the land under survey is located at altitudes below 6,500 feet, and is generally rather arid. Potential development would seem to hinge, to a considerable degree, on development of additional facilities for irrigation. With about a third of Ethiopia's imports composed of cotton and cotton goods, significant savings in foreign exchange could be effected, if cotton of good quality were locally produced.

Several exploratory projects for increased cotton production, some involving the granting of foreign concessions, are under consideration. As regards the small Ethiopian farmer, the basic problem is to educate him to the desirability of cultivating cotton regularly, rather than on a haphazard schedule, as has been traditional.

Other Fiber Crops: Other fiber crops grown in the country are small quantities of sisal, fiber flax, and, of most importance, koba (the false banana). Most koba is produced in southern Ethiopia, principally in Sidamo Province. Center stems of this plant provide strong fibers for grain bags and cordage. Parts of the leaf are used for matting and various household furnishings and equipment.

Tobacco: Under native custom, the use of tobacco has long been associated with the slave classes of the population only, and until recently cultivation of the crop enjoyed little popularity. Production has been estimated at between 225 and 450 tons a year, with most cultivation in south Ethiopia.

An acceleration in public demand, reflected in substantial increases in imports of both raw tobacco and cigarettes, led to an effort on the part of the Government to increase domestic production. Test plantings with Virginia types, made by the Tobacco Monopoly in the Awash Valley, away from the main Ethiopian tobacco region, have not yet been successful, however. Planters in the southern areas have been advised against expansion of their acreages until improved strains can be introduced.

Specialty Crops

Coffee: Coffee is Ethiopia's leading export and its chief source of foreign exchange. Estimated production has increased since the prewar period 1934-38 (20,000 long tons) and the post war years 1948-52 (27,000 tons) to an estimated 43,000 tons in 1955, with 36,000 and 41,000 tons in 1954 and 1953 respectively. In these estimates allowance has been made for annual domestic consumption, up to 4,000 tons, as well as for stock carried over.

Reported exports of coffee are not comparable to estimates for any one production year, due to the time variation in the endings of the statistical and crop years. Trade statistics indicate that roughly 38,000 tons of coffee were exported in the Ethiopian year ended September 10, 1955, 37,000 tons in 1954, and 36,000 tons in 1953.

In addition to its value as a source of revenue from exports, in all stages of development, from planting of the crop through its processing and marketing, coffee provides a livelihood for large numbers of Ethiopians.

Most of the coffee is cultivated at altitudes between 4,500 and 7,000 feet (see map next page). While many distinctive types are found, all apparently belong to the species Coffea arabica, and are usually classified in two categories, Abyssinian coffee and Harari coffee. The bulk of the crop is harvested from coffee forests, which are thought to be actually growths of wild coffee trees combined with abandoned plantations which have reverted to secondary forests. These are chiefly in the provinces of Kaffa, Walaga, Gamo-Gofa and Ilubabor.

There are some plantations in Sidamo. Gojam and Kaffa Provinces, most of which were established by Europeans some time ago.



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Here plants are shade-grown and now are not usually systematically cultivated. In Arusi and Sidamo Provinces and near Harar and Asba Tafari in the Chercher district of Hararge Province small acreages have been experimentally planted using methods formerly followed in the Belgian Congo. On these plantations trees are grown without shade and are severely pruned. In the province of Hararge there are also small, carefully tended plantings on irrigated land. Common practice is to stump trees when they are 15 to 20 years old; then a new cycle of growth commences.

Very few nurseries exist in Ethiopia. New plantings are ordinarily made by transplanting year-old seedlings from the coffee forests. While planting and harvesting dates vary slightly according to altitude, the general phenology and chronology of the crop is:

	<u>From:</u>	<u>Peak Date:</u>	<u>To:</u>
Flowering	Mid-January	End-February to beginning March	End March to beginning April
Fruit, green mature state	September	October	November
Harvest	November	December	January
Nurseries seeded	March-April.....		
Seedlings transplanted to transplant nursery	June to July		
Transplanted to permanent field site	July - September		

In western Ethiopia, near Gore, Dembidolo, Ghimbi and Lekempti, a second crop is harvested in July-August. On the irrigated acreages of the Chercher district flower and fruit often occur at the same time.

The natural flavor of Ethiopian coffee compares favorably with that produced anywhere. Nevertheless, because of improper picking, drying and processing methods, and poor marketing facilities, the quality of the crop is inferior to that of many other countries, and usually reaches the market in bad condition.

Coffee is customarily picked in small quantities, without regard to uniform maturity, dried on the ground, and sold to local merchants

as dry cherries for hulling. Only recently have inspections been conducted at shipping points to prevent an overly moist product from being allowed to leave the country.

In the last decade the increasing trend in Ethiopia has been toward a one-crop economy. Coffee, which accounted for less than a fifth of the total value of exports in 1947, represented 64 percent of the value of exports by 1954. With the trend considered likely to continue, Governmental policy is now directed toward improving the quality of the crop and increasing its quantity.

Consideration has been given to training growers to dry their product on platforms or mats rather than on the ground, to introducing the "wet" method of processing, and to the possibility of establishing coffee boards to purchase, process and grade coffee and sell it to the exporter. Recent recommendations by specialists of the International Cooperation Administration and the Food and Agriculture Organization have also included establishment of a coffee board which would provide educational extension services, plant research and administrative direction.

While most of these proposals are as yet in discussion stages, in some specific instances progress has been made. Half a million seedlings were planted for varietal tests at the Agricultural Technical School at Jima. Capital from the Development Bank helped finance a coffee processing center being built at Suntu, north of Jima, for demonstration of the "wet method". With 1,000 tons of red cherries required to produce the plant's capacity (250 tons of green coffee) some difficulty is envisioned in teaching growers to pick only red cherries in forests where trees do not conveniently grow close together. The native custom is to strip each single tree of all its cherries, ripe or not.

Ethiopia has large undeveloped areas where ecological conditions favor production of good quality coffee. It has been estimated that, with well-directed improvements, present production might conceivably be increased as much as 500 percent in a relatively short time. At present, little more than a start towards expansion of the crop has been made.

The Development Bank has undertaken the distribution of small loans to aid in the transformation of wild coffee forests to well-cultivated plantations, and over a five-year period is prepared to invest over a million Ethiopian dollars for improvement of many hundred-acre plots.

An American company has leased a 10,000 acre open plantation north of Jima. To the south of Jima an area of approximately the same

size is to be developed by Ethiopian investors, aided by American capital. Here most of the coffee is to be grown in forests.

In addition to a lessening of interest following last year's drop in prices, obstacles to the development program are many and complex. Foreign investors are deterred by the fact that leases, difficult at best to arrange with owners, are limited to 30 years duration. Foreigners may not ordinarily purchase land in Ethiopia. Both foreign and local investors are handicapped by the absence of geographic surveys and land registration, and the problems of supplying and maintaining adequate labor and qualified technicians in inaccessible areas. Proposals that an organization be formed to administer newly developed lands for absentee owners on a share-cropping basis have been considered. Lack of continuity of the land (former government holdings to be converted are now badly intersected by tribal holdings) and the absence of good roads in the coffee regions would seriously undermine the operating efficiency of such a body, if it were to be authorized.

Tea: Although climatic conditions in Ethiopia favor tea production, only small amounts, but of good quality, are grown, principally in Ilubabor Province and in other scattered areas of the west and south.

Spices, Drugs and Herbs

Many spice, herb and drug plants grow wild and under cultivation throughout the Empire. Most important are those producing cayenne pepper, ginger, cardamom, caraway, sage, tamarind, saffron, mustard and thyme. Native food is almost always seasoned with red pepper (berberi), a kind of pimiento widely grown in the temperate zones. Common varieties are Capsicum annum var. abyssinicum, which is a popular export to the Sudan and the Somalilands, and the stronger-flavored Capsicum frutescens. Berberi is most extensively cultivated near Dessie, and in the Addis Alem-Lekempti region.

Chat: Much Chat (*Catha edulis*), also called khat, cat, qat, or ghat, is used domestically as a substitute for tea or coffee among the Amhara tribes. Moslems prefer to munch the fresh leaves of this mildly narcotic plant. Chat combats the sensation of hunger, and produces mild exhilaration, but is considered to be less injurious than, for instance, the coca drug of Peru.

Ethiopian chat is exported in considerable quantities, principally to countries of the Arabian Peninsula, where it is preferred to locally grown varieties. Exports of chat have doubled since 1952; between 1952 and 1955 their value has risen from U.S.\$580,000 to U. S.\$2.7 million.

Livestock

The social prestige of owning great numbers of livestock, especially cattle and camels, is as pronounced in Ethiopia as it is in the pastoral Somalilands to the east. While the difficulties imposed by migrations of the herds, and by efforts at tax collection on the part of administrative authorities, and at tax evasion on the part of the subjects, have rendered accurate enumeration of the stock population almost impossible, several semi-official estimates have been made. Cattle and sheep are believed to total about 20 million head, each; goats are estimated at 12.5 million; donkeys, 3 million; mules and horses, 1 million each; and camels, about 500,000. Since pork is not generally acceptable in the Ethiopian diet, few swine are raised, less than 25,000 in total. Poultry is popular, however, 40 million chickens are said to be kept in the Empire. An estimated 1-1/2 million bees provide honey, the traditional sweetening agent, as well as beeswax for export.

Table IV.- Estimated Livestock Population

	1938	1944	1952	1953	1954
 Million head				
Cattle	9.0	15.4	19.0	19.0	20.0
Cows	2.5	4.5	6.0	6.0	6.0
Oxen	3.5	5.5	7.0	7.0	7.0
Other	3.0	5.4	6.0	6.0	7.0
Sheep	10.0	14.0	18.0	18.5	19.5
Goats	8.0	10.0	13.0	12.5	12.5
Donkeys	3.0	3.0	3.0	3.0	3.0
Horses	0.9	1.0	1.0	1.0	1.0
Mules	0.8	1.0	1.0	1.0	1.0
Camels	0.4	0.5	0.5	0.5	0.5
Swine ^{1/}					
Chickens	20.0	20.0	35.0	37.5	40.0
Bee hives	1.0	1.5	1.5	1.5	1.5

^{1/} Estimated (in thousands): 1938, 5; 1944, 5; 1952, 6; 1953, 12; '54, 22.

Cattle are first in economic importance among livestock. On the basis of the 20 million head total estimate, 7 million oxen are used by Ethiopian farmers in cultivating the land. Milk cows produce about 185 million gallons of milk annually. Most supplies from slaughterings and from animals dying of disease and other causes average from 25 to 30 pounds per capita a year. Income from the export of hides, sheepskins and goatskins is second only to that received from coffee.

Native cattle are the Zebu type (Bos indicus) similar to those of the Somali territories and Madagascar, and related to the larger Indian zebu. Cattle are not selectively bred. Heifers first produce at about 4 years of age, and, partly because of poor nutrition, their calf crop averages only 60 percent. The annual calf crop is estimated at about 3-1/2 million. Large bull calves are castrated at maturity for work oxen; smaller bulls run with the herds until they are slaughtered. Calves mature slowly, and at the end of four years are no larger than European cattle of half that age.

Except for small numbers of European dairy cattle brought by the Italians before World War II, and those imported since the war for experimental cross-breeding with native cattle, there are few foreign cattle in the country.

Nutritional problems of cattle husbandry in Ethiopia are: (1) Over-grazed pastures. In dry seasons much natural pasturage is so short that the cattle do not have enough to eat; (2) Absence, in many pasture grasses, of the protein and fattening elements necessary to produce well-fleshed animals; (3) Lack of salt and minerals in the animal diet. While some farmers are able to drive their herds periodically to salt lakes or mineral springs, high transportation costs prohibit the movement of adequate quantities of manufactured salt from the seacoast inland. A bonemeal plant, in connection with a packing establishment, at Asmara is the only source of commercial calcium or phosphorous; (4) Water. Farmers depend almost entirely on natural sources of water. These are sufficient during the rainy months, but in dry seasons herds in many areas must be driven as much as ten miles to water, and the animals grow thin and stringy. Among the nomadic tribes, as the Borana and Somalis of south Ethiopia, there is considerable competition for the scanty supplies of water and pasturage available. These people cultivate no crops, but depend on cattle and camels for their livelihood and subsist almost entirely on fresh and clabbered milk. The Government endeavors to allot each tribe certain areas and to prevent trespassing. Under this arrangement, in dry seasons, each group must migrate back to its designated well. No group will permit alien stock to water or feed away from its assigned territory. Cattle are watered every third day. Milk production dwindles from the first day to the third. The herds

can survive on this sparse regime, but can hardly be said to flourish.

Of consequence equal to nutritional deficiencies, perhaps, are the problems of animal diseases and parasites. Mortality is estimated at nearly a million and a half animals yearly. Those that survive do not grow or fatten normally. About half the calf crop is lost to disease; thus beef exports are sharply curtailed. Contagious bovine pleuropneumonia and rinderpest are most serious, but there are occasional epidemics of foot and mouth disease, and bovine tuberculosis has been observed. Liver flukes, and Piroplasmosis and heartwater caused by ticks are the most destructive of the parasitic diseases.

Because of continued incidence, however, native Ethiopian cattle have developed a degree of immunity to tick-borne diseases; most serious losses are among European cattle brought into the country, or among foreign animals with which Ethiopian cattle are herded at points of export. The same resistance to rinderpest is apparent. Epidemics of this disease are rare; in Ethiopia loss of animals is usually confined to a few in the herd. Consequently, cattle owners show little enthusiasm for a program, undertaken with the joint cooperation of the Ministry of Agriculture and FAO, which is principally designed for the control of rinderpest and bovine pleuropneumonia by vaccination. In addition to passive disinterest, the belief in some tribal areas that vaccinated animals will surely die, or, in others, that this is merely a Government device to enumerate animals for tax assessment purposes, have also impeded progress. Other difficulties encountered in the program's four years of operation include the lack of adequate working funds, too few trained personnel, and insufficient equipment to service the roughly 350,000 square mile area. Less than 3 million of the country's 20 million-odd head of cattle have been vaccinated to date.

Sheep and Goats

Sheep and goats are usually kept in small flocks, though it is not uncommon to see them grazing with herds of cattle and other stock. The Ethiopian sheep is a small, short-wooled variety, ranging in color from black to brown, white to spotted. Their coarse wool is seldom sheared; most sheep are raised for meat and sold through local markets. In a country where refrigeration facilities are practically non-existent, size of an animal slaughtered for meat is an important factor. The relatively small sheep and goats are adaptable for family consumption before spoilage occurs. While goat meat is less popular than mutton, it is a standard item in the Ethiopian diet. In some localities, goats provide milk as well. This hardy animal is able to thrive on sparse vegetation, and is found in greatest numbers in dry and rocky desert areas where cattle and sheep cannot survive.

Both sheep and goatskins are put to many home uses, and have a ready export market.

Other Livestock

Donkeys are used as pack animals to some extent over most of the country, but almost exclusively in the plateau regions. Types range from black to long-haired or pied. Ethiopian donkeys are sturdy animals, though they rarely exceed 300 pounds in weight. Horses and mules are also burden animals, principally used to carry produce into marketing centers. They are not ordinarily worked in the fields, but are occasionally ridden. The native Ethiopian horse bears some similarity to his probable Arabian forebearer, but is usually smaller, and somewhat less perfect in conformation. Camels are kept as pack animals, for riding, and as a principal source of subsistence, in the form of milk, then meat and hides, for nomadic owners. Largest herds are found in the low altitude deserts, as in eastern and southern Ethiopia, but they are not uncommon on the plateaus. Most swine in Ethiopia are raised around Addis Ababa or near other commercial centers where the European population is heaviest. For religious reasons, few Ethiopians will eat pork. Hogs do well, however, and among all meat animals, are those least seriously affected by disease.

Most families keep a few chickens for eggs, and their meat is preferred by many Ethiopians to any other. Egg production is low, probably under six dozen per hen a year, and these are small. A dozen native hen eggs equals the weight of only about eight eggs from hens of improved European breeds. There are said to be from 15 to 20 million hens of laying age in the country; from 60 to 75 million chicks are hatched annually. There have been some attempts in the last few years to improve the small native breeds by importing good strains of Australorps, Rhode Island Reds and White Leghorns from Europe and Kenya for individual use. These are reported to have done well, as have a few imported turkeys.

Bees produce good quality honey of a distinctive flavor, which is much appreciated as a sweetener. Teg, the most popular alcoholic beverage, is made from a honey base. Much of the honey used in the country is collected from the hives of wild bees. The native method of gathering honey, by smoking the hives, and incidentally destroying the bees, has in the past limited the value of both honey and the by-product beeswax prepared for export. New methods of bee-keeping are being introduced, however, in an effort to improve the economy of honey production.

Livestock Products

Dairy Products

Dairy products in various forms are essential in the Ethiopian diet. Camels' and goats' milk is used in desert areas, but cows' milk is available and utilized to a far greater extent. In most of the country milk production per cow is low, from one to two quarts a day. Among herds of the nomadic tribes, however, where people rely more exclusively on milk for food and where cattle selection for milking purposes is perhaps above the average, from three to four quarts can be taken daily, with good pasturage and water.

Offsetting low production per cow is the practice of beginning to milk cows that calve as soon as the calf is able to eat a little grass. Progressively larger amounts of milk are taken for human use as the calf is increasingly able to graze. It is estimated that about 250 quarts of milk are available for human consumption during the average six or seven month lactation of each cow, or, some 185 million gallons in total each year, on the basis that 3.4 million cows calve annually, and four-fifths of them are milked.

About half the milk is consumed fresh, largely by children of the owners, though some is marketed in cities and towns. Most adults do not drink milk. There is a pasteurizing plant at Asmara, and two at Addis Ababa. The standard of their products, however, is still somewhat below that of foreign suppliers. About U.S.\$200,000 is spent annually, chiefly by Europeans and well-to-do Ethiopians, for imported butter, cheese and dried milk.

A small butter manufacturing plant has recently been established at Goba in Hararge, and a good quality butter is flown from there to Addis Ababa, where it sells wholesale for a little less than U.S.\$1.00 a pound. While farmers were at first reluctant to sell their whole milk, it is now packed in to the factory by donkeys from a radius of 40 miles. Only the morning's milk is sold to the plant; the evening milk is used by the owner. Production is not yet large, but with enough business to offer a good price to the farmer, the project is expected to remain a going concern.

In most of the country the bulk of the milk that is not consumed fresh goes into the making of clarified butter, or ghee, for home use, local marketing, or for export. Ghee is churned by shaking milk in a gourd or jug. The product is then melted and bottled, formed into balls and wrapped in leaves. In regions where cattle outnumber people, ghee is an important sales item.

A soft cheese is also made for home use. Methods of prepara-

tion vary, but, basically, milk is allowed to curdle and the whey is removed leaving a semi-solid clabbered substance to be eaten.

Meat

In spite of Ethiopia's large numbers of livestock in proportion to her people, meat consumption and exports are kept below the national potential by slaughtering methods, and lack of refrigeration facilities. Meat must be eaten soon after slaughter. While the total available from cattle alone should furnish up to 35 pounds per capita a year, of that, 10 pounds are lost through waste and spoilage.

There are many slaughter houses in Ethiopia to service the markets of cities and villages, but about two-fifths of all slaughtering is done by the farmer himself, and, in some areas, just for the hides. About 1-1/2 million cattle are slaughtered annually, in addition to some 8 million sheep and 5 million goats.

While possibilities for industrial beef packing and canning have recently prompted several foreign firms to apply for Ethiopian concessions, an Israeli company, Incode, at Asmara, is the only meat packing plant now operating in the country. Live cattle from Ethiopia are shipped by rail to the municipal slaughterhouse at Djibouti in French Somaliland, where Incode maintains a quick freeze and cold storage plant. Practically all the company's output goes to Israel, and, principally because of the threat of rinderpest, it is sold there at a discount. In 1955 approximately 250 tons of frozen meat were shipped, against 1,400 tons in 1954 and half that in 1953. About 1,000 tons of canned meat are annually exported. Incode is attempting to branch out from the Israeli market, and has sold some canned meat in southern Europe, but most countries strictly prohibit imports of meat from sources where communicable animal diseases are prevalent.

Hides and Skins

Hides and skins make a vital contribution to Ethiopia's domestic and external economies. Total annual production of cattle hides, sheep and goatskins is estimated to roughly double their total export quantity. By types, the proportion is about 1-1/2 million hides, or half the production (3 million, derived equally from slaughterings and losses from disease), and nearly twice as many goatskins as sheepskins (average exports were 3.4 million and 1.9 million respectively for 1951-55). In terms of value for the same five years, average return from exports of hides was approximately U.S.\$3.9 million; from goatskins, U.S.\$2.4 million; and from sheepskins, U.S.\$1.6 million.

Some Ethiopian salale and berbera sheepskins and bate goatskins

are of exceptional quality and bring good prices on world markets. Salale sheepskins, used in the manufacture of fine leather, come from the black, brown and white highland sheep. Skins are case flayed and suspension dried in a traditional manner by which Ethiopian parchment has been produced for centuries. Berbera skins, well known for high quality, are from a type of sheep raised on the lower plateaus. Bate and bate type goatskins from highland goats are suspension dried by the rope method, now generally adopted, and are case flayed.

Some good suspension dried butchery hides are produced in abattoirs in principal towns of the country. Improper skinning and processing methods decrease the value of a high percentage of Ethiopian hides, however. Particularly in rural areas, depreciation begins when the slashed throat method of slaughter adds to the damage of branding, bush and insect scars. About 85 percent of the hides are still ground dried, that is, stretched and pegged to the ground for a few days in dry seasons, longer during the rains. Some attempt is made to keep the hides in the shade of trees or bushes, but sun spoilage is heavy, and it is not uncommon to speed up the drying process by the use of braziers. The dessicated end product brings only about 75 to 80 percent of the normal price for suspension dried hides.

With the assistance of FAO, an effort to re-educate processors of hides and skins is being made. Plans call for the training of travelling instructors for demonstration throughout the provinces and in ten township abattoirs. Suitable butchering knives have been introduced to replace native tools, which are usually fashioned of untempered scrap steel.

In addition to large numbers of rural tanners and leather workers, there are six tanneries and two shoe factories in Addis Ababa. With improved production of hides and skins, more will be needed. Another development opportunity lies in the projected expansion of local production of wattle and other tannin products for domestic use and possibly for export. In the past, most vegetable tanning materials have been imported at great expense from Kenya.

Wool

A good market exists in Ethiopia for wool. Native sheep produce only about 550 tons a year, and that of low quality. Imports of wool and woollen goods cost Ethiopians some U.S.\$2.5 million annually. Under a sheep improvement program to meet domestic demands for wool, experiments in cross-breeding sheep on native farms with imported Merinos are to be undertaken by the Imperial Ethiopian College of Agriculture. Trained extension workers will supervise, through the stages of shearing, grading and handling the wool. While the problems of administration, of possible disease among the imported sheep,

and wool marketing difficulties are inherent to the program, it is hoped that a new industry, providing occupation for many workers and another cash crop for Ethiopia, may result.

Foreign Trade

Exports

The bulk of Ethiopia's export trade is traditionally in agricultural commodities (see Table V below). For the four years, 1952-55, agricultural products represented 87 percent of the total value of exports. Earnings from coffee amounted to 56.2 percent; hides and skins, 11.5 percent; cereals and pulses, 9.8 percent; and oilseeds, 9.5 percent.

Table V. - Ethiopia's Exports of Principal Commodities, 1952-55 ^{1/}

<u>Year</u> ^{2/}	<u>Coffee</u>	<u>Cattle hides</u>	<u>Sheep skins</u>	<u>Goat skins</u>	<u>Cereals, pulses</u>	<u>Oil Seeds</u>	<u>Other</u>	<u>Total</u>
QUANTITY								
	... 1,000 tons		Million pieces	 1,000 tons			
1952	25.1	6.1	1.6	2.0	83.8	36.7	-	-
1953	36.1	6.0	2.1	4.3	93.2	46.4	-	-
1954	36.6	6.1	1.8	4.4	80.9	46.2	-	-
1955	38.0	4.8	2.3	4.0	80.4	44.7	-	-
VALUE								
	... Millions of U. S. dollars...							
1952	23.5	4.1	1.3	1.4	6.8	5.3	3.5	45.9
1953	33.4	3.0	1.5	2.7	6.6	5.8	10.8	63.8
1954	45.2	2.7	1.4	2.8	5.0	4.9	8.3	70.3
1955	34.3	1.6	1.9	2.7	4.4	6.2	10.9	62.0
... PERCENT OF VALUE OF TOTAL EXPORTS...								
	- Percent -							
1952	51.8	9.0	2.8	3.0	14.9	11.7	6.8	100.0
1953	52.4	4.7	2.3	4.2	10.3	9.1	17.0	100.0
1954	65.2	3.9	2.1	4.0	7.1	7.0	10.7	100.0
1955	55.4	2.6	3.1	4.3	7.1	10.0	17.5	100.0

^{1/} Beginning October 1952 includes Eritrea.

^{2/} Year ended September 10.

In recent years, with the development of the coffee trade, a trend toward a one-crop economy has become increasingly apparent. From 1948 to 1955, annual coffee exports have risen from 15,000 tons to over 38,000. The increase in value is more pronounced, from U.S. \$5.9 million, or 19 percent of all export earnings in 1948, to U.S.\$45.2 million, 65 percent of earnings by 1954. A decline in value, to U.S. \$34.4 million, or 55 percent of total value of exports in 1955, reflected only the fall in world coffee prices; in quantity, 1955 exceeded the previous year.

While other agricultural exports have generally increased, the rise has not been proportionate over the last decade, and fluctuation has been marked. Decreased exports of cereals, pulses and oilseeds followed a fall in internal prices of goods exported from the country, when Ethiopia did not devalue her currency in 1949. High prices during the Korean boom, and an increased demand for imported consumer goods, boosted exports of the 1952 and 1953 crops to the 1949 level for cereals, and well above it for pulses and oilseeds. 1954 and 1955 brought a decline in shipments of hides and skins, cereals and pulses. Edible oils, which in 1953 brought nearly U.S.\$650,000 in export returns have now nearly disappeared from the market. Exports of live cattle, meat products, and oilseeds, on the other hand, have increased.

Direction of the export trade for the last three years is indicated in Table VI.

Table VI. - Value of Ethiopian Exports, by Destination, 1952-55 1/

Country	Value (In Millions of U. S. \$s)			Percent of total value		
	1953	1954	1955	1953	1954	1955
U.S.A.	12.4	22.4	14.8	19.4	31.9	23.9
Aden <u>2/</u>	18.8	18.8	14.2	29.4	26.7	22.9
Arabia	1.2	1.2	2.2	1.9	1.7	3.5
Egypt	0.3	0.7	0.8	0.5	1.0	1.3
Fr. Somaliland <u>2/</u>	8.4	7.7	8.6	13.2	11.0	13.9
Sudan	2.3	1.4	1.0	3.6	2.0	1.6
Israel	0.4	0.8	1.1	0.6	1.1	1.8
Italy	8.8	8.5	10.7	13.8	12.1	17.2
France	1.4	0.7	0.7	2.2	1.0	1.1
Netherlands	0.3	1.1	1.2	0.5	1.6	1.9
Germany	0.2	0.3	0.6	0.3	0.4	1.0
United Kingdom	4.4	3.3	2.7	6.9	4.7	4.4
All others	4.9	3.4	3.4	7.7	4.8	5.5
Total exports	63.8	70.3	62.0	100.0	100.0	100.0

1/ Years ended September 10.

2/ Mostly entrepot trade.

The final destination of many Ethiopian exports is obscured by the use of the entrepots of Aden and Djibouti for onward shipment.

Exports from Ethiopia to the United States are consistently understated, since much of the coffee reported in Ethiopian customs records as destined for Aden and French Somaliland is in actuality transshipped to this country.

For 1955, the drop in value of exports to Aden and the United States was due entirely to the lowered price of coffee. A reduction both in the quantity and price of coffee caused the decline of exports to the Sudanese Republic. Italy's substantial gain in 1955 resulted mainly from heavy imports of Ethiopian oilseeds, and raw cotton. An increase in exports to French Somaliland, of vegetables, live cattle (presumably for slaughter in Djibouti and shipment as frozen meat to Israel) and chat, more than balanced the coffee loss.

Ethiopian exports are valued at declared values plus customs duties and taxes at the customs station of export. This results in a value somewhat lower than F.O.B. frontier value, since shipping costs to the frontier are not included on the third of all exports which are cleared at customs in Addis Ababa.

Imports

In the case of imports, the system in use up to June 10, 1955 exaggerated the value of about 40 percent of all imports, by including freight rates to Addis Ababa, their point of distribution. Under a new system inaugurated with the fourth quarter of 1955 (June 10-September 19) C.I.F. and charges values at frontier or ports will be shown for all imports. A reduction of about 10 percent in the apparent value of imports is therefore to be expected beginning with that period.

Raw cotton and cotton goods averaged nearly 30 percent of the total value of imports during the four years 1952-55. (See Table VII) Other agricultural imports were sugar, canned fruits and vegetables, canned milk products, woolen goods and tobacco. Motor vehicles, petroleum products and manufactures made up the balance.

Table VII. - Ethiopia's Imports of Principal Commodities, 1952-55 1 /

Year	2/ Mfgs.	Raw Cot- ton & Mfgs.	Other textile Prod- ucts	Sugar	Salt	Petro- leum Prod- ucts	Motor Vehi- cles	Tires and Tubes	Other	Total
QUANTITY										
-----1,000 long tons Number -----										
1952	-	-	9.5	50.9	28.5	967	-	-	-	-
1953	-	-	17.1	35.2	59.2	1,651	-	-	-	-
1954	-	-	21.9	5.5	55.4	2,240	-	-	-	-
1955	-	-	n.a.	n.s.c.	n.a.	n.a.	-	-	-	-
VALUE										
----- In millions of U. S. dollars -----										
1952	16.9	1.9	2.1	2.0	3.1	1.7	1.7	15.6,	45.0	
1953	16.1	4.5	2.7	1.4	5.0	2.6	1.8	21.4	55.5	
1954	15.1	5.2	2.8	0.2	4.9	4.1	2.1	28.1	62.5	
1955	16.6	4.8	1.4	n.s.c.	5.7	4.7	1.6	30.6	65.4	

1/ Beginning October 1952, includes Eritrea.

2/ Years ended September 10.

n.a. Not available.

n.s.c. Not separately classified.

There was a time lag in the rise of imports from 1949, but with increased receipts from exports, imports reached the export level by 1954, and were slightly in excess of exports in 1955. The trend now runs toward imports of semi-luxury goods, such as tea, shoes and electrical appliances. Also noticeable in the last year or so is a decrease in receipts of raw cotton, which is interpreted as an indication

of the stepped-up domestic production of yarns and yard goods. Also, reduced sugar imports have been balanced by heavier home production at the Wonji sugar factory.

Imports into Ethiopia from any source are practically unrestricted.

Table VIII. - Value of Ethiopian Imports, by Origin, 1952-55 1/

Country	Value In millions of U. S. \$s			Percent of total value		
	1953	1954	1955	1953	1954	1955
U.S. A.	8.1	8.7	9.1	14.6	13.9	13.9
Aden	1.6	1.5	1.3	2.9	2.4	2.0
Arabia	1.3	2.0	1.0	2.3	3.2	1.5
Egypt	2.4	1.8	2.6	4.3	2.9	4.0
India	9.9	9.3	8.9	17.8	14.9	13.6
Japan	3.0	4.9	5.4	5.4	7.8	8.3
Italy	9.0	9.5	10.4	16.2	15.2	15.9
France	1.7	2.1	5.0	3.1	3.4	7.6
Germany	2.1	5.1	5.4	3.8	8.2	8.3
Belgium	1.3	2.0	1.5	2.3	3.2	2.3
Sweden	0.4	0.8	0.7	0.7	1.3	1.1
Netherlands	1.0	1.1	2.1	1.8	1.8	3.2
United Kingdom	8.2	7.7	4.8	14.8	12.3	7.3
All Others	5.5	6.0	7.2	10.0	9.5	11.0
Total imports	55.5	62.5	65.4	100.0	100.0	100.0

1/ Years ended September 10.

While Italy, India, the United Kingdom and the United States have customarily supplied most imports, the last year has brought some definite shifts in trade. Imports from the United Kingdom have sharply declined; Netherlands imports have doubled in value, chiefly due to imports of equipment for the sugar factory, and radios; France more than doubled her exports to Ethiopia, principally with rolling stock and building materials. Imports from Yugoslavia increased from a value of just over U.S.\$22,000 in 1954 to U.S.\$684,000 in 1955. Much equipment for a Yugoslavian-owned sawmill in Kaffa Province was imported, and several Yugoslavian retail stores opened in Ethiopian cities were stocked from abroad. Imports from the United States, mostly raw cotton, maintained the previous year's percentage level in 1955.

During 1955 Ethiopia became a target for visiting trade missions and dignitaries, including those of Great Britain and Czechoslovakia (Ethiopian imports from both countries were in decline in 1955), Japan, Bulgaria, East and West Germany. An Egyptian trade mission was not successful in reaching an agreement for purchasing cattle at the rate of 4,000 head a month. Although trade with Canada is now negligible, a most-favored-nation clause between the two countries, designed to improve Canada's position as a source of agricultural machinery should this trade expand, was signed. In return, Ethiopian coffee will enter Canada on equal terms with Brazilian coffee.

Eighteen countries, including the United States, maintained national exhibits at the Jubilee Trade Fair in Ethiopia in November-December, 1955.

Review of Government Measures for Agricultural Development

There is evident in Ethiopia today a great desire to develop natural resources and improve the whole social economy cooperatively. In the years since the Italian occupation the Ethiopian Government has actively engaged in a number of programs to that end. Projects for the extension of educational facilities, and for improvements in communications and transportation have received most concentrated attention. Basic plans for application of modern farming techniques to the existing Ethiopian ways of farming, however, are also being implemented.

For all facets of the developmental program loans from the International Bank for Reconstruction and Development have aided in the provision of operating funds. Foreign advisors and agencies, brought into the country either privately or through arrangements with governments have figured significantly in the national program.

The Ethiopian Ministry of Agriculture now cooperates with the United States Technical Cooperation Mission (Point IV, USOM/E), the Food and Agriculture Organization of United Nations, the International Locust Control, and other organizations to provide service through its Departments of Agriculture, Animal Husbandry, Forestry, the Veterinary Services, and organization for pest control. A vital step forward in agricultural development and assistance was taken in 1952 when USOM/E, with the Government of Ethiopia, directed their joint attention to priority activities considered essential to the growth of the agricultural economy. In each instance, emphasis on the training of capable native Ethiopians became the salient feature. Major achievements under this program since 1952 are listed below:

(1) The agricultural technical school of junior college level, established at Jima, for demonstration and promotion of crop and live-stock experimental work. Under arrangements with USOM/E, the teaching staff was supplied by Oklahoma Agricultural and Mechanical College, of Stillwater, Oklahoma.

(2) The scheduled opening, in the fall of 1956, of a higher level agricultural college, the Imperial Ethiopian College of Agriculture and Mechanical Arts at Harar. Many of the instructors for this college will be supplied by the Oklahoma school.

(3) The Alomata agricultural improvement center in Tegre Province to carry on education and demonstration work. Much emphasis is now being placed on cotton production and marketing in this Cobbo-Alomato area.

(4) An agricultural machinery pool, created for the training of Ethiopians in maintenance and operation of agricultural machinery and tools.

(5) Plant introduction and field testing programs at several locations, including the Jima school.

(6) A project for locust control, from which has developed the all-Ethiopian pest control unit in the Ministry of Agriculture.

(7) A cooperative coffee program under which coffee research and training at the agricultural technical school at Jima were increased, and a nursery program for parts of Kaffa Province was inaugurated. The program is designed to increase seedling production and distribution; promote full development of existing forest coffee; encourage coffee planting on unforested land; and provide education in superior methods of cultivation, harvesting and processing.

(8) In cooperation with FAO, a cattle vaccination program, under which vaccinating teams in each province concentrate particularly on rinderpest. An attempt to control other diseases such as contagious bovine pleuropneumonia, anthrax and internal parasitism is also being made.

Most other improvements in Ethiopian agriculture have resulted from investigations by FAO specialists, and action taken on their recommendations. Studies have been made on seed improvement; cotton production and marketing; livestock improvements, including supervision of a serum laboratory in connection with the cattle vaccination work; coffee research; and advice as to farm machinery and equipment suitable to Ethiopia's special soil problems. It has been largely with FAO assistance that the Ethiopian Government has attracted the capital and techniques of foreign concessionaires, such as the Dutch company operating the Wonji sugar factory, the Israeli company, Incode, which packs and cans meat at Asmara, an American development project for 10,000 acres of coffee land in Kaffa Province, and a British concession for modern slaughterhouses in several Ethiopian cities.

Current governmental thinking is that agriculture in Ethiopia will show earliest improvement with concentration on four measures:

(1) Further development of educational facilities, such as the new college of Agriculture and Mechanical Arts at Harar, the schools at Jima and Ambo, and related establishments;

(2) Continued emphasis on the agricultural extension service program, in which young Ethiopians are trained to demonstrate modern farming methods to their own people;

(3) Greater use of machinery and tools on the farms, which should be accompanied by increased industrialization;

(4) Production of more meat and milk, by selective breeding of Ethiopia's cattle, and reduced incidence of disease.

In contrast to many of her African neighbors, Ethiopia is not now over-populated. With the application of much well-directed energy to the implementation of such programs, it may be predicted that her agricultural production will continue to expand more rapidly than her population. Extensive cultural adjustment lies before complete reform of her agricultural economy, however. Trained native Ethiopians, educated to the advantages of modern farming practices, but still cognizant of the value of those special Ethiopian techniques adapted to local conditions - able through experimentation to evolve a reasonable

balance between the virtues of the old and the new, and to patiently demonstrate their findings throughout the land - will in the last analysis determine the measure of realization for the Empire's agricultural potential.

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